

AMENDMENTS TO THE CLAIMS

1. (Original) A device for non-invasive measurement of the individual metabolic rate of a substantially spherical metabolizing particle, which device comprises
 - a) at least one compartment, said compartment being defined by a diffusion barrier and capable of comprising a medium with a substantially spherical metabolizing particle, said diffusion barrier is arranged around the substantially spherical metabolizing particle to restrict and reduce the diffusive flux of metabolites to and from the particle, allowing metabolite transport through the diffusion barrier to and/or from the substantially spherical metabolizing particle by means of diffusion whereby a metabolite diffusion gradient is allowed to be established from the substantially spherical metabolizing particle and throughout the medium,
 - b) at least one detector for measuring the concentration of a metabolite inside the compartment.
2. (Original) The device according to claim 1, wherein the diffusion barrier is constituted by a compartment wall having at least one metabolite permeable opening and the medium.
3. (Original) The device according to claim 2, wherein the compartment wall is produced from a substantially metabolite impermeable material.

Claims 4-7 (Canceled)

Preliminary Amendment

8. (Original) The device according to claim 1, wherein the diffusion barrier is constituted by a high-viscosity medium.

9. (Canceled)

10. (Currently Amended) The device according to ~~any of the preceding claims~~ claim 1, wherein the shape of the compartment is selected from the group consisting of a cylinder, a polyhedron, a cone, a hemisphere or a combination thereof.

11. (Canceled)

12. (Currently Amended) The device according to ~~any of the preceding claims~~ claim 1 comprising an insert for the adjustment of the transverse dimension of the compartment.

13. (Currently Amended) The device according to ~~any of the preceding claims~~ claim 1, wherein the compartment has an adjustable bottom ~~in order~~ operable to change the dimensions and either increase or decrease the compartment volume.

Claims 14-20 (Canceled)

21. (Currently Amended) The device according to ~~any of the preceding claims~~ claim 1, wherein a metabolite permeable layer is arranged in the bottom of the at least one compartment.

Claims 22-26 (Canceled)

27. (Currently Amended) The method according to ~~any of the claims 21-26~~ claim 21, wherein a metabolite permeable layer is placed between the substantially spherical metabolizing particle and the metabolite detector.

Claims 28-29 (Canceled)

30. (Currently Amended) The device according to ~~any of the preceding claims~~ claim 1, wherein the metabolite is oxygen or carbon dioxide.

31. (Currently Amended) The device according to ~~any of the preceding claims~~ claim 1, wherein the detector is an oxygen detector.

Claims 32-35 (Canceled)

36. (Currently Amended) A non-invasive method for determining the metabolic rate of a substantially spherical metabolizing particle, comprising

- a) providing at least one device as defined in ~~any of claims 1-35~~ claim 1,
- b) arranging a substantially spherical metabolizing particle in the medium of a compartment,

- c) measuring a metabolite concentration inside the compartment obtaining a metabolite concentration measure, and
- d) correlating said metabolite concentration measure to a metabolic rate of said substantially spherical metabolizing particle.

37. (Original) The method according to claim 36, wherein metabolite is supplied to the substantially spherical metabolizing particle by diffusion through the medium.

38. (Currently Amended) The method according to ~~any of the claims 36-37~~ claim 36, wherein the substantially spherical metabolizing particle is cultured in the compartment.

39. (Canceled)

40. (Currently Amended) The method according to ~~any of the claims 36-39~~ claim 36, wherein the metabolic rate of said substantially spherical metabolizing particle is determined by determining a metabolite diffusion gradient in the compartment based on the measured metabolite concentration, and correlating said metabolite diffusion gradient to the metabolic rate of said substantially spherical metabolizing particle.

41. (Canceled)

42. (Currently Amended) The method according to ~~any of the claims 36-41~~ claim 36, wherein the metabolite concentration is a gas partial pressure.

43. (Original) The method according to claim 42, wherein the gas partial pressure is the partial pressure of oxygen or carbon dioxide.

44. (Canceled)

45. (Currently Amended) The method according to ~~any of the claims 36-44~~ claim 36, wherein the substantially spherical metabolizing particle is selected from the group consisting of an embryo, ~~group of cells, such as~~ at least one cancer ~~cell(s)~~ cell, at least one stem ~~cells~~ cell, embryonal stem cells, C. elegans ~~or other small~~ and multicellular organisms.

Claims 46 and 47 (Canceled)

48. (Currently Amended) A method for regulating metabolite supply to a substantially spherical metabolizing particle during culturing, comprising

- a) providing at least one device comprising a compartment with a medium,
- b) culturing a substantially spherical metabolizing particle in the medium of ~~[[a]]~~ the compartment,
- c) measuring a metabolite concentration inside the compartment obtaining a metabolite concentration measure, and optionally
- d) correlating said metabolite concentration measure to a metabolic rate of said substantially spherical metabolizing particle and optionally

Preliminary Amendment

- e) ~~[[e]]~~ regulating the metabolite supply depending on the metabolite concentration measure and/or the metabolic rate of said substantially spherical metabolizing particle.

49. (Currently Amended) The method according to claim 48, wherein at least one of the devices is as defined in ~~any of claims 1-35~~, claim 1.

50. (Canceled)

51. (Currently Amended) The method according to claim ~~[[50]]~~ 48, wherein the metabolite is oxygen and the metabolic process is respiration.

52. (Currently Amended) The method according to claim 48 ~~or 49~~, wherein the regulation is conducted by changing the metabolite concentration outside the compartment.

53. (Currently Amended) The method according to claim 48 ~~or 49~~, wherein the regulation is conducted by changing the dimensions of the compartment.

Claims 54-56 (Canceled)

57. (Currently Amended) The method according to claim ~~[[53]]~~ 48, wherein the regulation is conducted by changing the diffusion barrier of the compartment.

Claims 58 and 59 (Canceled)

60. (Original) A method for selecting a viable embryo comprising,

- a) determining the metabolic rate of the embryo at least once during culturing , and
- b) selecting the embryo having an optimal metabolic rate.

61. (Original) The method according to claim 60, wherein the determination of the metabolic rate is conducted without causing any change in the growth conditions experienced by the embryo.

62. (Currently Amended) The method according ~~any of the claims 60-61~~ to claim 60, wherein the metabolic rate is measured in a device as defined by ~~any of the claims 1-35~~ claim 1.

63. (Currently Amended) The method according ~~any of the claims 60-61~~ to claim 60, wherein the metabolic rate is determined by a method as defined in ~~any of claims 36-47~~ claim 36.

64. (Currently Amended) A non-invasive method for determining the metabolic rate of a metabolizing particle, comprising

- a) providing at least one device as defined in ~~any of claims 1-35~~ claim 1,
- b) culturing a metabolizing particle in the medium of a compartment,
- c) reducing metabolite supply to the medium during at least a part of the culturing period,

- d) measuring a metabolite concentration inside the compartment obtaining a metabolite concentration measure after the metabolite supply has been reduced, and
- e) correlating said metabolite concentration measure to a metabolic rate of said substantially spherical metabolizing particle.

65. (Original) The method according to claim 64, wherein the metabolite is oxygen and the metabolic rate is the respiration rate.

66. (Original) The method according to claim 64, wherein the oxygen supply is reduced to zero.

67. (Currently Amended) The method according to claim 64, wherein the gas partial pressure measure in the compartment has been obtained during the period of reduced oxygen supply.

68. (Original) A culture device for culturing a metabolizing particle, which device comprises at least one compartment, said compartment being defined by a diffusion barrier and capable of comprising a medium with a metabolizing particle, said diffusion barrier allowing metabolite transport to and/or from the metabolizing particle by means of diffusion, whereby a metabolite diffusion gradient is allowed to be established from the metabolizing particle and throughout the medium.

Preliminary Amendment

69. (Canceled)

70. (Currently Amended) A method for culturing a metabolizing particle, said method comprising

- a) providing at least one device as defined in ~~any of claims 68-69~~ claim 68,
- b) arranging a metabolizing particle in the medium of the compartment, and
- c) culturing the metabolizing particle.